

## LA-UR-17-27739

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Title: Initiator Design Update post FDR - Gentzlinger

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# Source Physics Experiment Phase II

## Initiator Update Post FDR



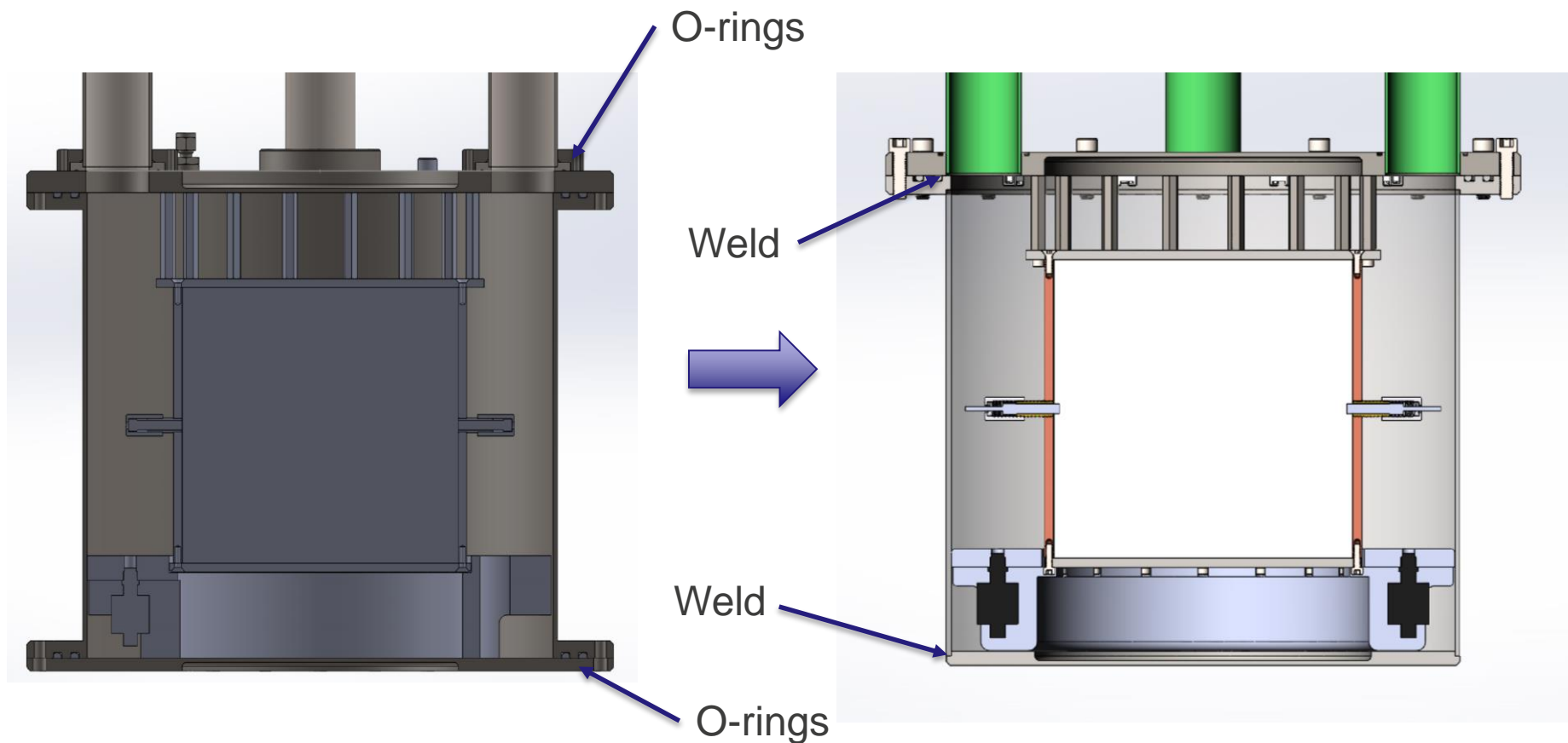
Robert Gentzlinger  
Los Alamos National Laboratory  
Source Execution Team  
June 27, 2017

Slide 0

# Revisions to the Initiator Design since the FDR on February 22, 2017

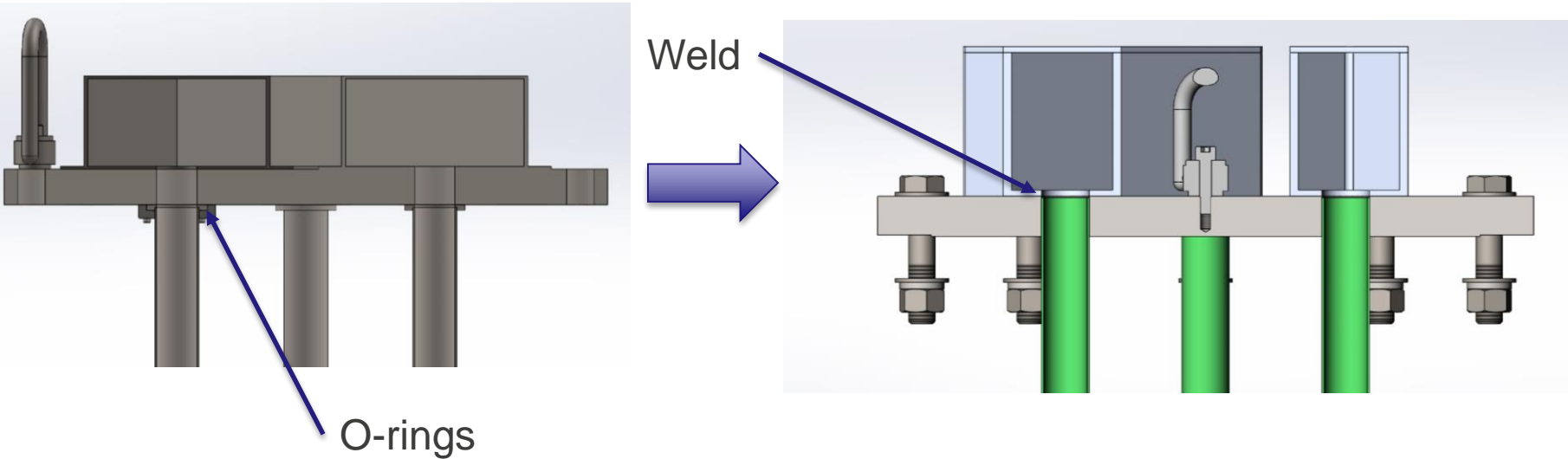
- Replaced O-ring seals with weld joints at multiple locations
- Revised O-ring material to Kalrez
- Added a support ring for the copper/PBX-9501 assembly
- Added two float gages to the internal volume of the initiator
- Added additional seal welds to the vertical tube structure
- Added support frames along the vertical tube structure
- Incorporated a strongback to facilitate assembly and handling

# Redesign of joints from O-rings to welds (Initiator)



- LANL plans to leak test the assembly at LANL and at NNSA
- LANL plans to do a long time test in nitromethane

# Redesign of joints from O-rings to welds (Top Cover)



# • Revised O-ring material to Kalrez

Key to O-Ring Material Compatibility Ratings	
(4)	Good, both for static and dynamic seals
(3)	Fair, usually OK for static seals
(2)	Sometimes OK for static seals; not OK for dynamic seals
(1)	Poor
(0)	No Data

## O-Ring Compatibilities

[Order by Rating](#)

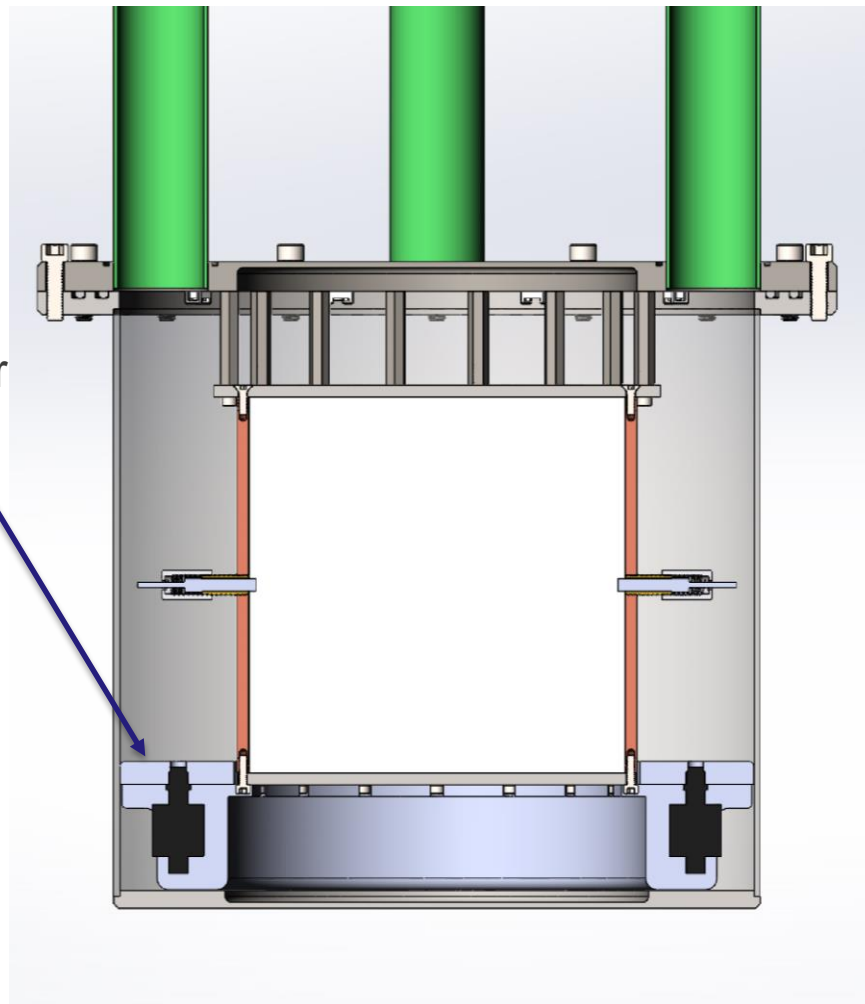
O-Ring Materials Compatible with Nitromethane		
(select a material to show its compatible chemicals)		
Aflas (0)	Buna-N (Nitrile) (1)	Butyl (3)
Chemraz (4)	Epichlorohydrin (0)	Ethylene-Propylene (3)
Fluorocarbon (1)	Fluorosilicone (1)	Hypalon (2)
Kalrez (4)	Natural Rubber (3)	Neoprene (1)
Nitrile, Hydrogenated (1)	Polyacrylate (1)	Polysulfide (0)
Polyurethane, Cast (0)	Polyurethane, Millable (1)	Silicone (1)
Styrene Butadiene (0)	Teflon, Virgin (4)	Vamac (0)

# Added a Support Ring to the Copper/PBX-9501 Assembly

The ring supports the copper/PBX 9501 assembly during transport (assembly is horizontal)

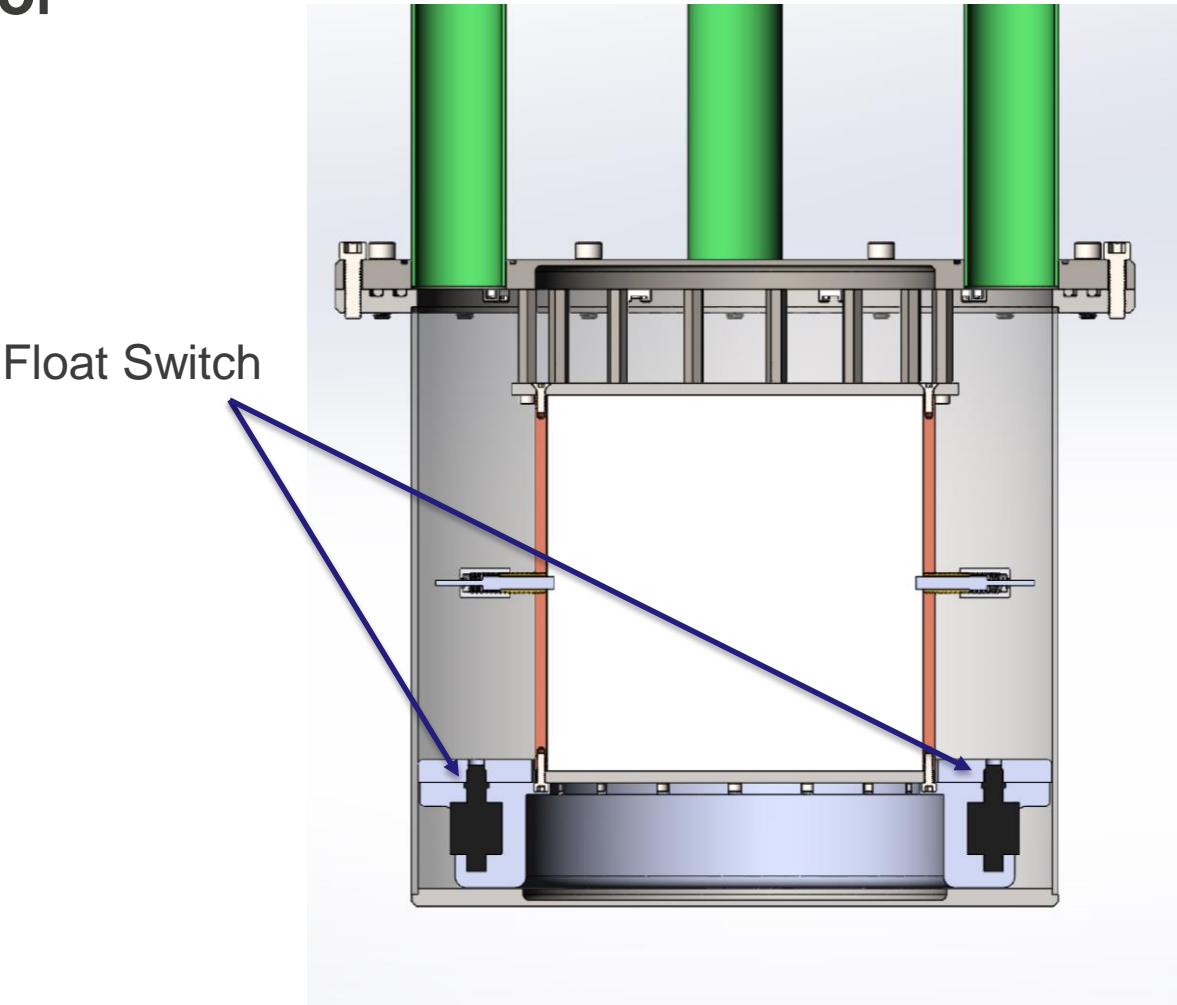
Delrin  
Ring/bumper

The ring was not included during initiator testing. LANL's Shock Physics SME's have endorsed the design. This canister design feature will be incorporated in the Admiral's test.

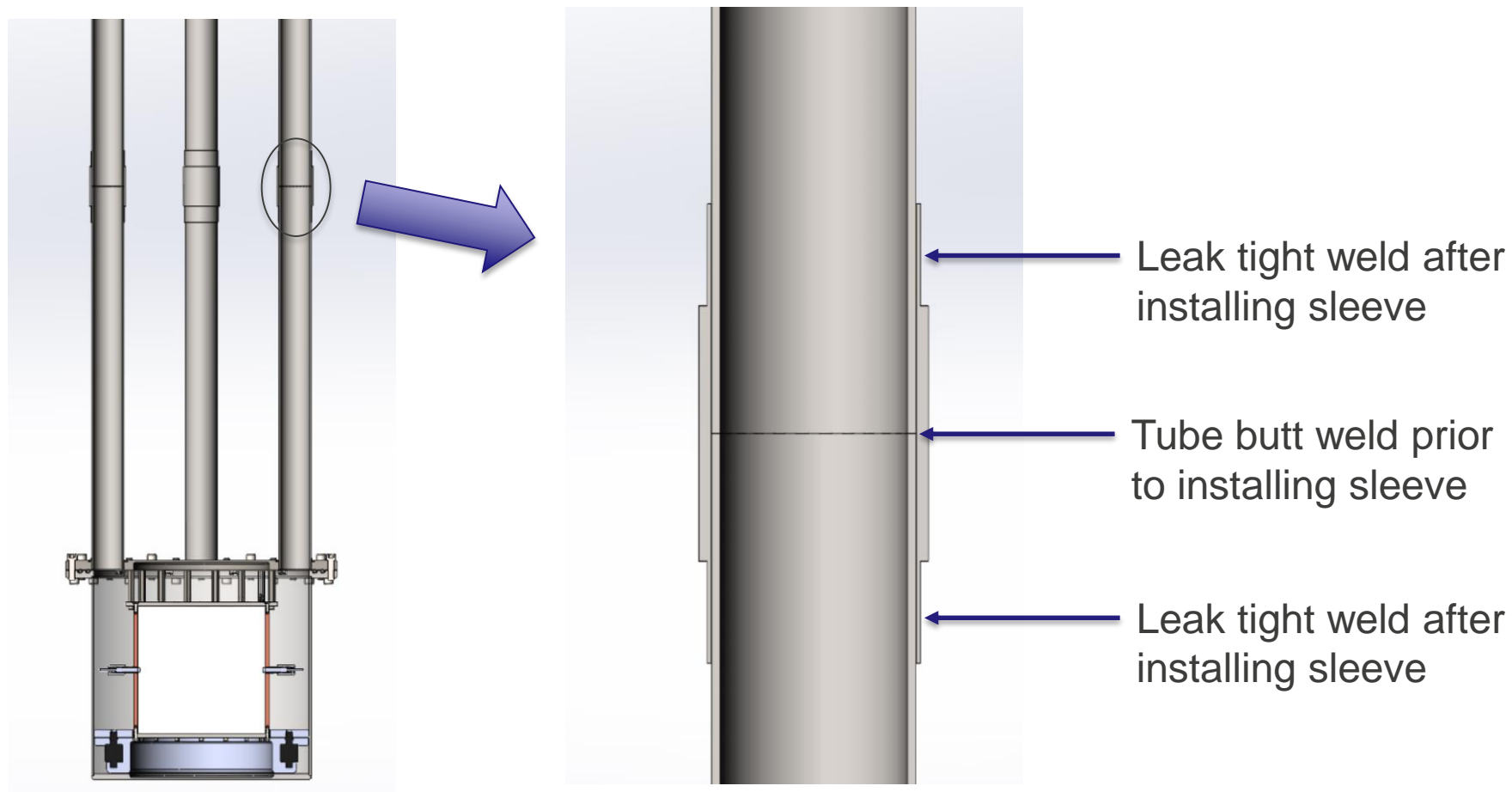




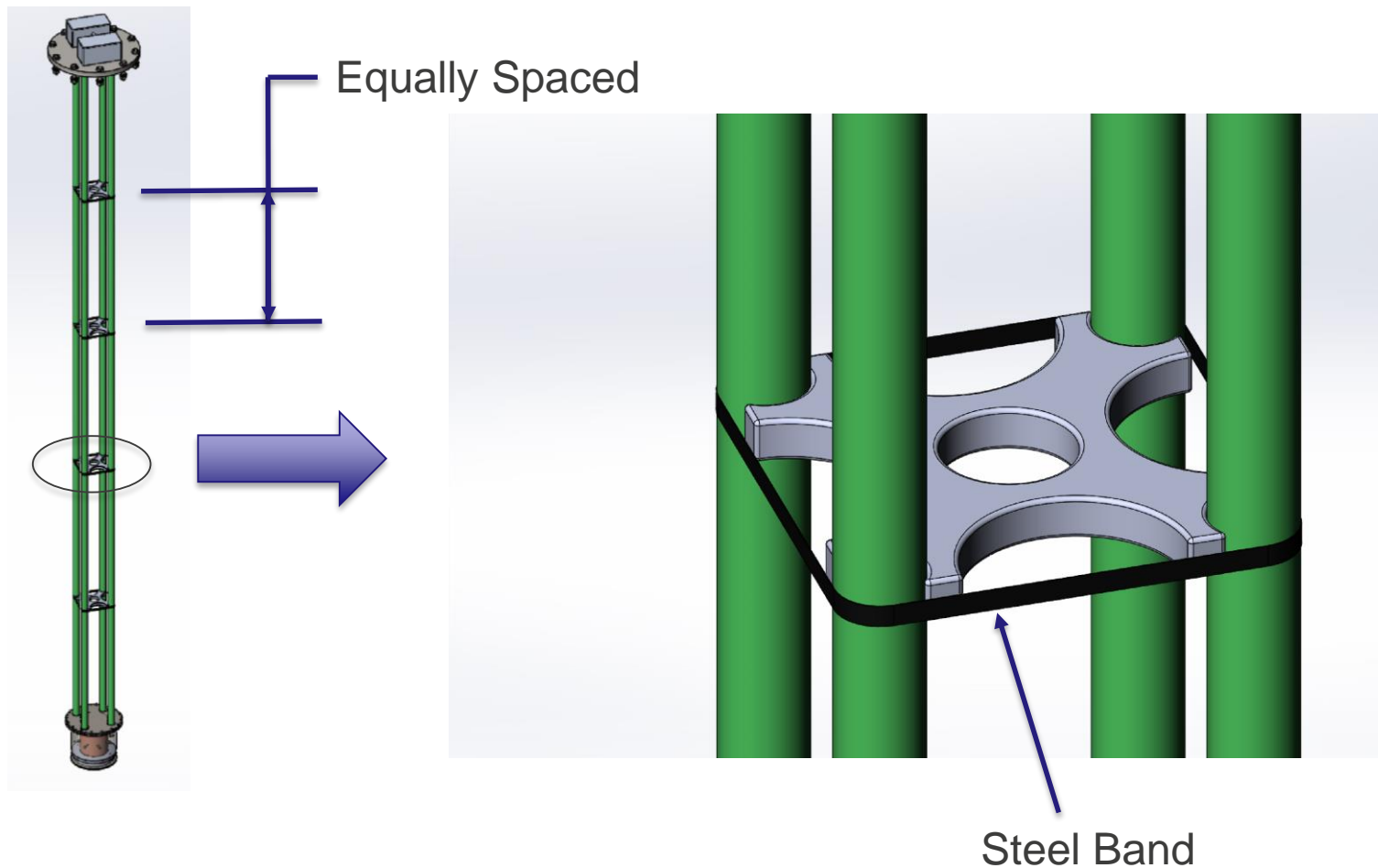
- Added Two Float Gages to the Internal Volume of the Initiator



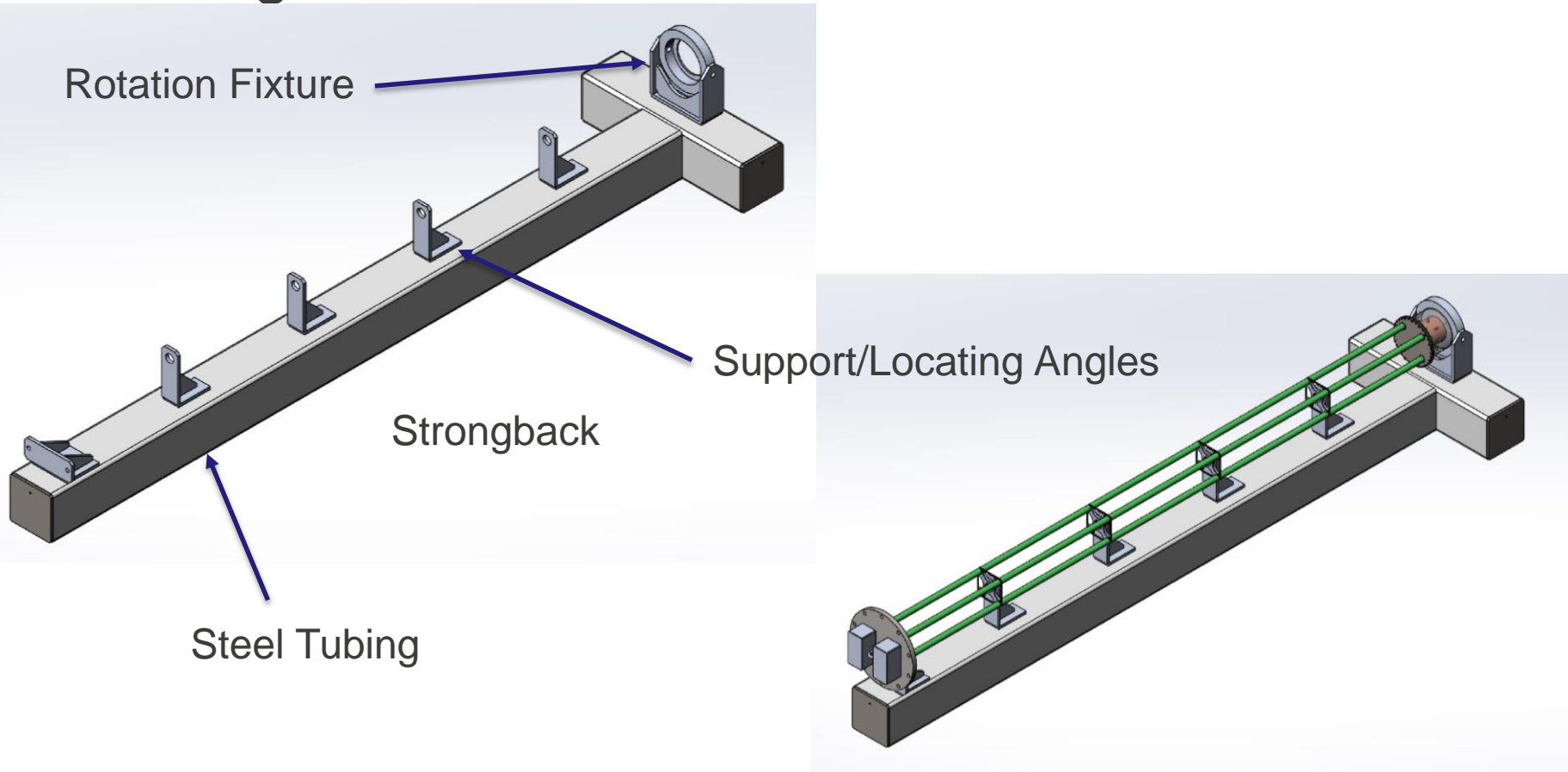
- **Added Additional Seal Welds to the Vertical Tube Structure**



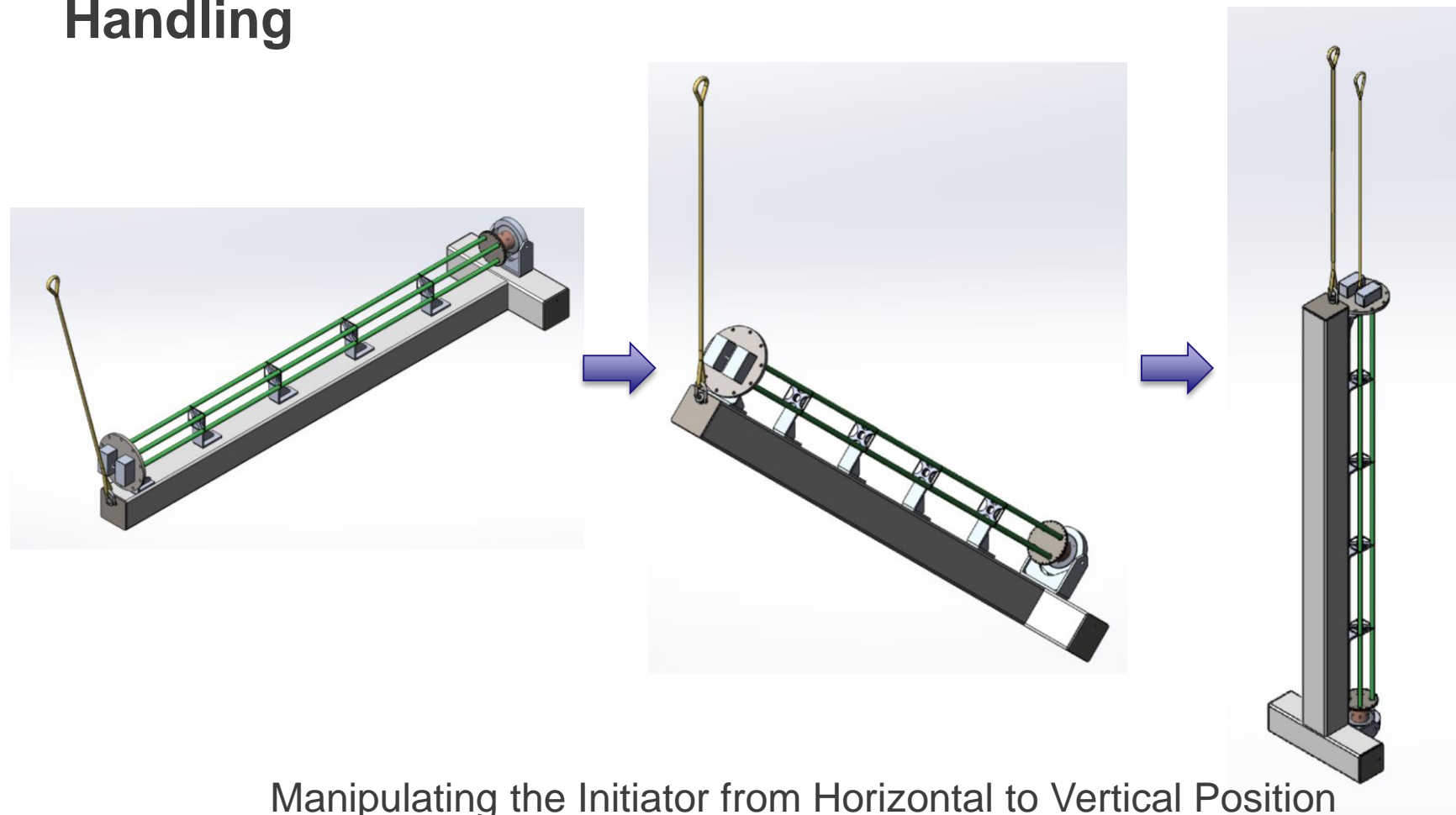
- Added Support Frames Along the Vertical Tube Structure



- Incorporated a Strongback to Facilitate Assembly and Handling

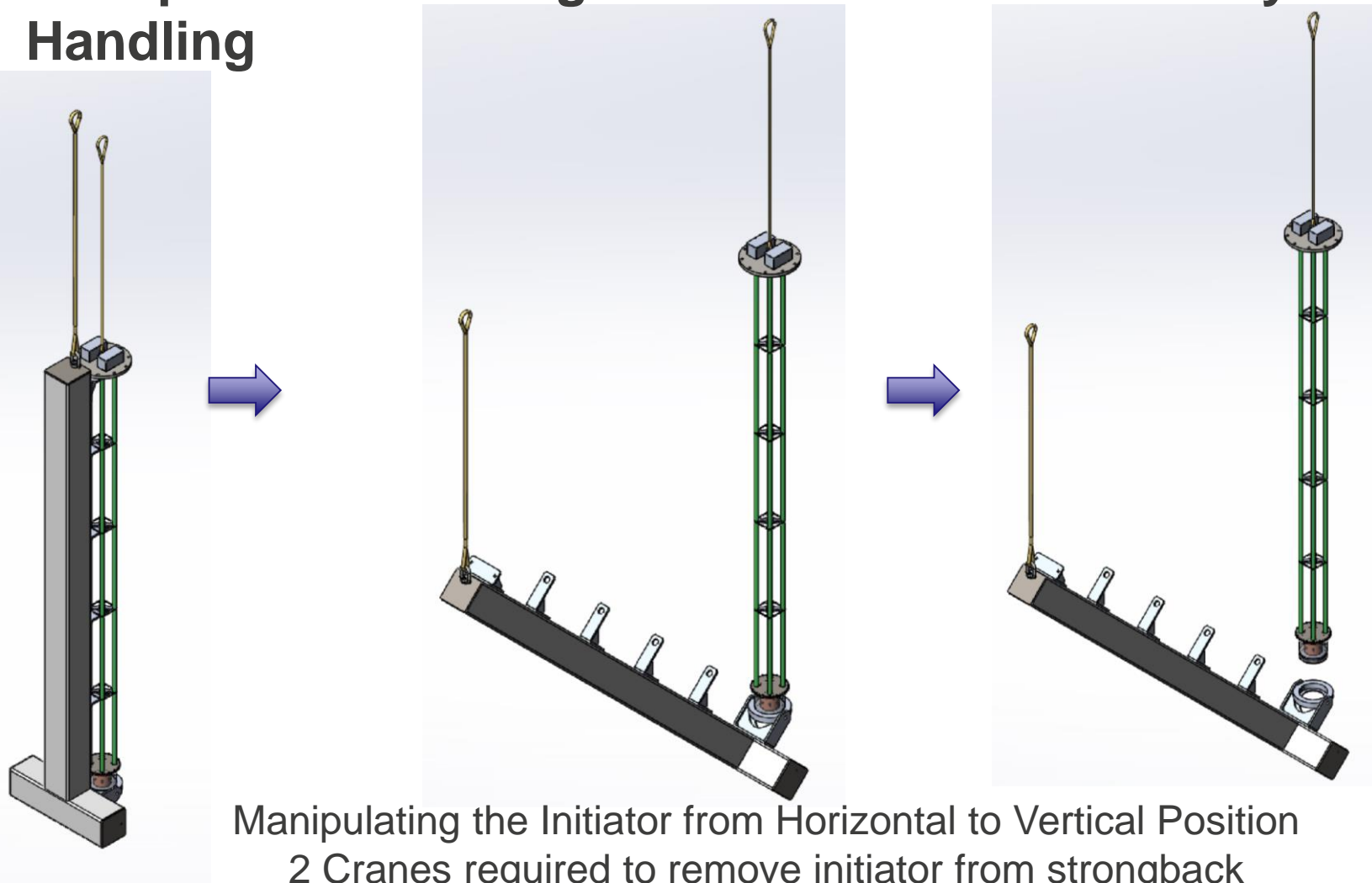


- Incorporated a Strongback to Facilitate Assembly and Handling

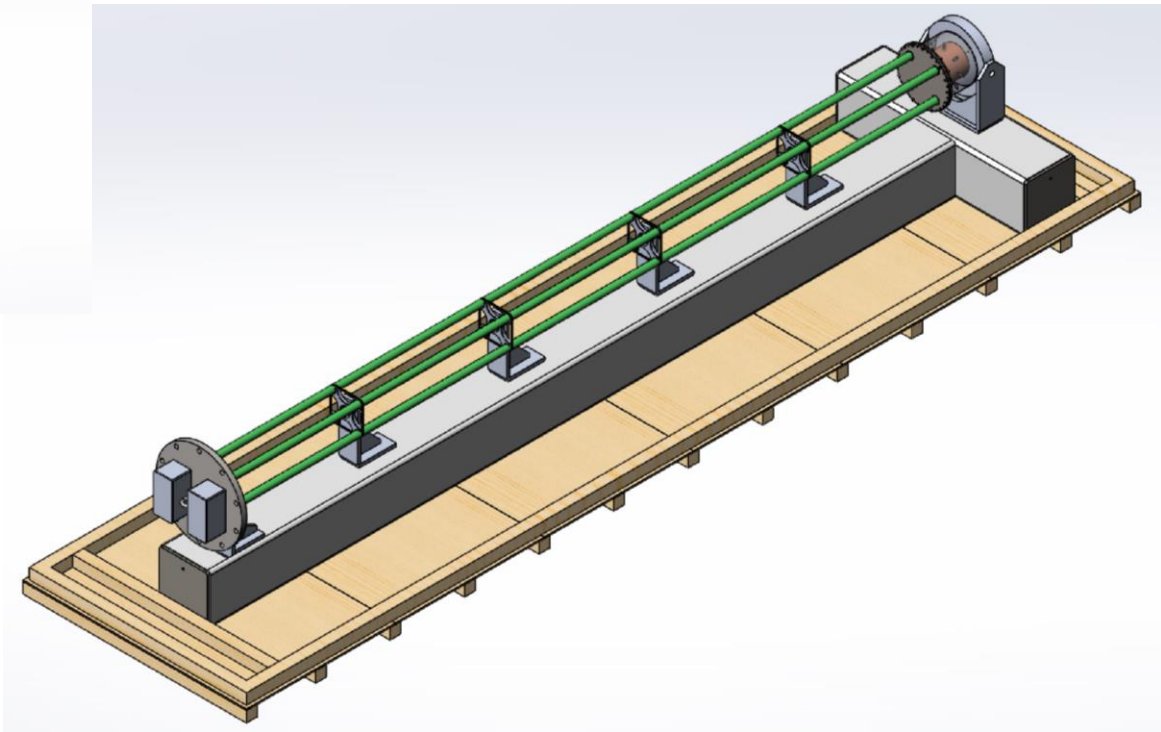
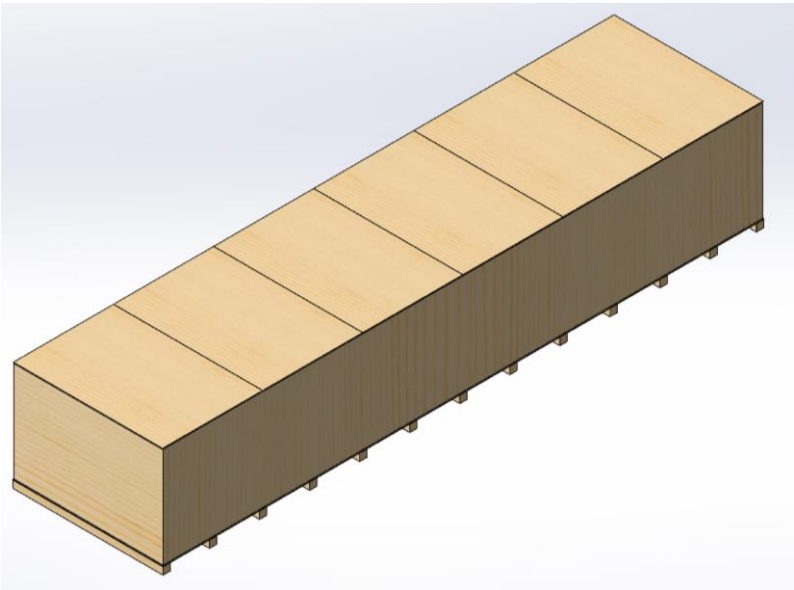


Manipulating the Initiator from Horizontal to Vertical Position  
2 Cranes required to remove initiator from strongback

- Incorporated a Strongback to Facilitate Assembly and Handling



- Initiator Shipping Container





# Issues that still need to be Resolved

- Location of the initiator within the canister to establish the length of the aluminum tubes for each assembly. Temperature changes in the nitromethane varies the volume.

